# **Historic, Archive Document**

Do not assume content reflects current scientific knowledge, policies, or practices.



752Ah 772A. H. D. No. 151

# UNITED STATES DEPARTMENT OF AGRICULTURE Agricultural Research Administration Bureau of Animal Industry

BIBLIOGRAPHY ON THE USE OF MOLASSES IN LIVESTOCK FEEDING by N. R. Ellis and R. E. Davis, Animal Husbandry Division

#### Beef Cattle

- Beet molasses in fattening rations. E. J. Maynard, Breeder's Gaz. 79, No. 5, 213 (1921) ESR 44,672. See also Am. Soc. An. Prod. 1922, 73 and ESR 49,870.
- Cattle feeding investigations, 1919-20. C. W. McCampbell and H. B. Winchester, Kans. Sta. Circ. 86 (1921) ESR 44,769
- Feeding blackstrap molasses to young calves. R. C. Calloway. La. Bull. 180 (1921) ESR 45,775. See also La. Rpt. 1921 and ESR 47,470.
- Cane vs. beet molasses for cattle. Evvard et al. Ia. Sta. Rpt. 1920. See also Am. Soc. An. Prod. 1920
- Prelim. reports of experiments with feeding steers, using cottonseed and molasses. E. Barnett and C. J. Goodell. Miss. Circ. 48 (1923) ESR 49,869.
- The use of a limited amount of molasses in fattening yearling steers. E. A. Trowbridge, Mo. Bull. 223 (1924). ESR 52,466.
- Steer feeding experiments at the Worland, Wyo. State farm. Wyo. rpt. 1925, p. 92.
- Cane molasses for finishing calves. C. C. Culbertson et al. Ia. Leaflet 27 (1929). ESR 61,759. (See also Ohio rpt. 1932 Bull. 497 ESR 67,158).
- Molasses in rations for fattening calves. P. Gerlaugh. Ohio Bull. 463 (1930) ESR 64,368. See also Ohio Bimo. Bull. 154 (1932) ESR 66,656.
- Feeding cane molasses to fattening cattle, etc. Minn. Bull. 274 (1931) ESR 65,365.
- Feeding and nutrition studies with livestock. La. Bien. Rept. 1930-31. ESR 67,295.
- Melasses as a substitute for corn in beef finishing rations. F. R. Edwards A.S.A.P. 1931 p. 176.
- Molasses in rations for fattening calves. P. Gerlaugh. A.S.A.P. 1931, p. 179.
- Molasses alfalfa supplement for fattening yearling cattle. E. A. Trowbridge and H. C. Moffet. A.S.A.P. 1931, p. 182.

Beef cattle investigations. M. Jacob. Tenn. Rpt. 1932., 1933.

Cane molasses for fattening calves. P. Gerlaugh. Ohio Sta. Bull. 532, Rpt. 1933.

Blackstrap molasses as a feed for fattening steers and farm work horses. As. So. Ag. Workers Proc 33, p. 51. (1933)

Sugar beet - byproduct rations for cattle. Utah Bull. 250

Molasses for fattening steers. Wis. Bull. 428 (1934) (Sta. Rpt.)

Cane molasses as a cattle feed. S. Labh Singh and S. Gambhir Singh. Agr. and Livestock in India 4, No. 2,156 (1934) - ESR 73,369.

Factory cane molasses as a cattle feed. Labh Singh and Sodhi Gambhir Singh. Agr. Live-stock India 7, 347-58 (1937). C.A. 32, 2598.

Further observations on cane molasses as a cattle feed. Same author and journal as above, 5, No. 2, 3 (1935).

Blackstrap molasses and corn - soybean silage for fattening steers.
M. G. Snell. La. Bull. 266 (1935) - ESR 74,832.

Molasses - alfalfa supplements for calves. Mo. Bull. 370 (1936) (Ann. Rpt.)

Cane molasses for steers, Hawaii Rpt. 1936, p. 70. ESR 76,835.

Molasses - vs. corn for heifers. Nebr. Rpt. 1936, 1937.

Molasses with cottonseed hulls and straw. Kans. Bien. Rpt. 1935-6.

Cane molasses as substitute for corn. Mo. Bull. 387 (1937).

Molasses in the steer fattening ration - U.S.D.A., B.A.I. Rpt. 1937, 1938, 1939.

Molasses for beef cattle. Hawaii Rpt. 1937.

Utilization of blackstrap molasses with corn and oats in fattening steer calves. W. L. Blizzard and B. R. Taylor, A.S.A.P. proc. 1937, p. 98. See also Okla. Bien. Rpt. 1937-8.

Cattle feeding 1936-7: Cane molasses, J. H. Skinner and F. G. King. Ind. Sta. Bull. 430 (1938). ESR 80,381.

"C" molasses vs. cane molasses in fattening. Also - beet molasses. Colo. Rpt. 1938.

Blackstrap molasses in steer fattening. Fla. Rpt. 1938.

Rice byproducts and molasses for fattening cattle. La. Bien. Rpt. 1937-8.

- Utilization of molasses. II. Pen-fattening of beef cattle on molasses and other by-product feeds. Alvin R. Lamb. Hawaiian Planters' Record 42, 77-88 (1938). cf. Tbid 35, 341-4 (1931); III Feeding trials on laboratory animals to determine the value of bagasse, molasses and kiawe bean (Prosopis chilensis) meal. Ibid. 42, 89-96. C. A. 32: 7156 (1938).
- Rice straw and molasses as supplements to pasture feeds for range cattle.

  R. G. Macahilig. Philip. Agr. 28, 561 (1939) ESR 82,805.
- Feeding blackstrap molasses to fattening steers. Bray, C. I., Snell, M. G., Morrison, F. L., and Jackson, M. E. Lá. Agric. Exp. Sta. Bull. 394, pp. 43, (1945).
- Effect of molasses and molasses feed on quality of beef. Webb, R. J. and Bull, S., Univ. Ill. Agr. Exp. Sta. Bull. No. 510, pp. 487-496 (1945).
- Dried molasses-beet pulp and beet molasses for fattening cattle. Singleton, H. P., Ensminger, M. E. and Heinemann, W. W. State Coll. Washington Agr. Exp. Sta. Bull. No. 469, pp. 31 (1945)
- Bagomolasses as cattle feed. 1. Digestibility and nutritive value of bagomolasses. Ray, S. C. and Talapatra, S. K. 2. The use of bagomolasses for feeding working bullocks. Ayyar, N. K. and Zubery, A. W. (Animal Nutrition Sect., Imp. Vet. Res. Inst., Izatnagar) Indian J. Vet. Sci. 15, 133-140; 140-146 (1945)
- Citrus products for fattening cattle. Kirk, W. G. Fulford, H. J. and Davis, G. K. J. Animal Sci., 8, p. 624 (1949) Proc. (Florida Agric. Exp. Sta., Gainesville).
- Corn cobs, molasses, urea for cattle feeding. W. M. Beeson, Feedstuffs 22:47, pp. 20-21 (1950).
- Corn cobs and molasses. W. M. Beeson, Flour and Feed 51:5, pp. 22-23 (1950).

# Dairy Cattle

- Blackstrap molasses for dairy cattle. E. Brinthall Miss. Circ. 38 (1921) ESR 47,674.
- Values of various new feeds for dairy cows. T. E. Woodward et al. U.S.D.A. Bull. 1272 (1924).
- Feeding experiments with dairy cattle at the Pa. Sta., Pa. Bull. 188 (1924)
- The effect of cane molasses on the digestibility of a complete ration fed to dairy cows. P. S. Williams, J. Dairy Sci. 8, p. 94 (1925) ESR 54;67
- Corn chops vs. cane molasses for milk production in Porto Rico. W. M. Ellison and J. Varas Catala. P. R. Ann. Rpt. 1928, p. 99 ESR 62,165.

- Corn silage vs. a mixture of wet beet pulp and molasses for milk production. C. F. Monroe et al. Ohio Bimo. Bull. 148 (1931) ESR 64,767.
- Sugarcane molasses on production and reproduction of dairy cows. Hawaii Rpt. 1932, and 1933.
- Beet pulp vs. molasses for milk production. Porto Rico Rpt. 1932.
- Molasses as a dairy feed. Wis. Sta. Bull. 428 (1934) (Sta. Rpt). See also Am. Da. Sci. Assn. Abs.papers, p. 40 (1934) by Bohstedt et al
- Value of cane molasses in the dairy ration. Hawaii Rpt. 1934, p. 24.
- Cane molasses as a feed for dairy cows. Hawaii. Bull. 73 (1934) ESR 73,228.
- Pineapple bran and cane molasses. Hawaii Rpt. 1935, p. 20. and Hawaii Sta. A.H.D. Prog. Notes 13 (1936) ESR 75, 396 and Ibid 14 (1936) ESR 75,534
- Dehydrated molasses in dairy rations. N. J. Rpt. 1935, 1936.
- Use of molasses in dairy rations. Hawaii Rpt. 1936, p. 68.
- Molasses corn, fodder mixtures. . Kans. Bien. Rept. 1935-6.
- Palatability and nutritive value of A.I.U. and molasses alfalfa silage for diary cows. G. Bohstedt et al. A.S.A.P. Proc. 1937, p. 51.
- The value of dried molasses and yeast for dairy calves. O. P. Lepard et al. Abst. J. Dairy Sci. 21, p. 116 (1938).
- Utilization of urea and growth of heifer calves with corn molasses or cane molasses as the only readily available carbohydrate in the ration. R. C. Mills, C. C. Lardinois, I. W. Rupel, and E. B. Hart. J. Dairy Sci. 27, 571-8 (1944) C.A. 39, 3339 (1945).
- The nutritive value of wood molasses as compared with cane molasses. Colovos, N. F., Keener, H. A., Prescott, J. R., and Teeri, A. E. (New Hampshire Agr. Exp. Sta., Durham) J. Dairy Sci., 32, 907-913 (1949)
- Wood sugar molasses for dairy cattle. Jones, I. R. Oregon Agr. Exp. Sta. Circ. No. 181, pp. 12 (1949) (Corvallis)
- The value of wood molasses for growth of dairy heifers. Blosser, T. H., Scott, G. W., Erb, R. E. and Shaw, A. O. J. Dairy Sci., 32, 719 (1949) Proc. (State Coll. Washington)
- Molasses as a replacement for grain in the rations of growing heifers and milking cows. Mather, R. E., and Bender, C. B. J. Animal Sci., 10, 1056 (1951) Proc. (New Jersey Agri. Exp. Sta.)

#### Horses and Mules

- Molasses for work mules. La. Bien. Rpt. 1928-29 ESR 63,364.
- Blackstrap molasses for farm work Mules M. G. Snell and W. G. Taggart, A.S.A.P. p. 192 (1931) See also La. Bull. 230 (1932) and ESR 68,234.
- Experiments with livestock. Miss. Rpt. 1932.
- Molasses for work mules. M. G. Snell, A.S.A.P., p. 110 (1932) See also La. Bieh. Rpt. 1932-3, and A. So. Agr. Work. Proc. 1932, p. 51.

#### Swine

- Beet molasses as a feed for weanling pigs. W. E. Carroll Trans. Utah Acad. Sci. 1, p. 205 (1908-1917) ESR 43,180 abstract
- Hog feeding experiments. H. Hackedorn and J. Sotola, Wash. Bull. 169 (1922) ESR 48, 71 also ESR 47,575.
- Grazing and feeding trials with pigs. E. Barnett and C. J. Goodell. Miss. Bull. 218 (1923) (Blackstrap Molasses). ESR 50, 69. See also Miss. Rept. 1925 and ESR 55,668.
- Fattening rations for swine. M. F. Grimes. Pa. Bull. 215 (1927) See also ESR 50,469; 56,165; 58,359 and 569.
- Molasses for pigs. W. L. Robison. Ohio Rpt. 1933, Bull. 516.
- Cane molasses as a supplement to fattening rations for swine. L. A. Henke. Hawaii Sta. Bull. 69 (1933). ESR 71,84. See also Hawaii Rpt. 1933.
- Pineapple bran molasses mixtures for fattening swine. L. A. Henke and G. W. H. Goo, Hawaii Sta. A.H.D. Prog. notes No. 11 (1935) ESR 74,528 Ibid. No. 14 (1936).
- Molasses for pregnant sows. Mo. Bull. 370 (1936) (Ann. Rpt.)
- Molasses for fattening swine. Hawaii. Rpt. 1936, 1937.
- Blackstrap molasses -- a poor feed for hogs. H. P. Gayden, Assoc. S.A.W. Proc. 37-38, p. 91 (1936-7)
- Comparison of cane molasses with other feeds. Neb. Rpt. 1937.
- Blackstrap molasses as a substitute for corn and oats in fattening rations. C. P. Thompson, A.S.A.P. Proc., p. 146 (1938), p. 113 (1937) (See also Okla. Bien. Rpt. 1937-8)
- Molasses in swine rations. Wis. Bull. 440 (1938) (Ann. Rpt.)
- Melasse som for til griser. (Molasses as food for pigs.) Husby, M. Landbrukhogsk. Inst. hysdyrernoering foringsloere, Rept. No. 11, pp. 3 (1941) Repr. from Norsk Landbruk, 471-473 (1941).

- Further studies on molasses as hog feed. Molasses versus rice bran in rations for growing and fattening pigs. Emmanuel T. Gervacio. Philippine Agr. 30, 492-8 (1941) .C. A. 2037 (1942).
- Nutritional inadequacy of beet molasses rations for swine. Russel A. Rasmussen, Harry H. Smith, Ralph W. Phillips and Tony J. Cunha. Utah Agr. Expt. Sta. Bull. 302, 5-22 (1942) C. A. 36, 70826 (1942).
- Cultivation of the sugar beet and its value for the feeding of hogs. W. Stahl. Zuckerrubenbau 22, 115-20, 121-6 (1940) C.A. 36, 71743 (1942).
- Cane molasses for pigs from weaning to a weight of seventy pounds. Willet, E. L., Work, S. H. Henke, L. A. and Maruyama, C. Univ. Hawaii Agric. Exp. Sta. Tech. Bull. No. 3, Oct. 1946, pp. 15 (Honolulu).
- Nutritional disease in swine by feeding great amounts of molasses. Possible thiamine deficiency in pigs on rations containing silage preserved by formic acid. Per Slagsvold (Roy. Agr. Coll., Uppsala, Sweden). Kgl. Lantbruks-Hogskol. Ann. 15, 251-290 (1948) (in English) C.A. 42, 6430b (1948).
- Effect of feeding citrus or cane molasses on carcass quality and the content of certain vitamins in pork. French, R. B., Pearson, A. M., Cunha, T. J., Schmidt, V., Abbott, O. D., Anderson, C. L., and Glasscock, R. S. J. Animal Sci. 8, 612 (1949) Proc. (Univ. Florida, Gainesville)

# Poultry

Cane molasses for poultry. A. R. Winter. Pltry. Sci. 8, 369 (1929) ESR 62,551.

Sugarcane molasses for chicks. Hawaii Rpt. 1932.

Cane molasses in poultry rations. Hawaii Bull. 67 (1933) ESR 70,227.

Feeding cane molasses to growing chicks and laying hens. A. J. G. Maw., Sci. Agr. 13, No. 12,743 (1933) ESR 71,234.

Blackstrap molasses for poultry. La. Bien. Rpt. 1932-3.

Sugarcane molasses as a poultry feed. Hawaii Rpt. 1933. 1937.

Cane molasses as a substitute for corn meal in laying rations. Cornell (N. Y.) Rpt. 1935.

Blackstrap molasses and sweet potatoes for broilers. Assoc. S.A.W. Proc. C. W. Upp. 37-38, p. 140 (1936-7)

Cane molasses in poultry rations. C. W. Upp. La. Bull. 289 (1937).

Came molasses as a constituent of rations for growing fowls. Walther, H. Ott, R. V. Boucher, and H. C. Knandel. Poubtry Sci. 20, 470 (1941) C. A. 36, 1284 (1941).

- Feeding-cane molasses as a constituent of poultry rations. I. Molasses for growing chickens. Walther H. Ott, R. V. Boucher and H. C. Knandel. Poultry Sci. 21, 340-5 (1942); cf. C. A. 36, 1285. C.A. 36, 65959 (1942).
- Feeding-cane molasses as a constituent of poultry rations. II. Molasses for adult chickens. Walther H. Ott and R. V. Boucher. Poultry Sci. 21, 536-9 (1942); cf. C.A. 36, 65961. C. A. 37, 9159 (1943)
- The feeding of poultry when normal foods are scarce. M. H. French (Vet. Dept., Mpwapwa) E. African Agr. J. Kenya, Tanganyika, Uganda, Zanzibar 10, 152-8 (1945) C.A. 40, 1249<sup>2</sup> (1946).

#### Sheep

Molasses feed. Cal. Rpt. 1919.

- The utilization of molasses amids in comparison with protein by the organism of ruminants. W. Voltz et al. Landw. Jahrb. 52, 431 (1918) ESR 46,67.
- Lamb feeding expts. in western Nebr. J. A. Holden, Nebr. Bull. 194 (1923) ESR 49,670.
- Beet byproducts for steers and lambs. E. J. Maynard. Am. Soc. An. Prod. p. 73 (1922) ESR 49,870.
- Cane and beet molasses for fattening lambs. J. M. Evvard et al. Ia. Bull. 215, p. 369 (1923) ESR 49,870
- Lamb feeding expts. at the Worland, Wyo. State Farm. Wyo. Sta. Rpt. 1925, p. 92. ESR 54,759.
- Comparative value of different kinds of molasses in lamb fattening rations. G. E. Morton. Colo. Rpt. 1929.
- The use of cottonseed meal, cottonseed hulls and molasses in fattening rations for N. Mex. range lambs. P. E. Neale. N. Mex. Bull. 200; (1932) ESR 67,298.
- Molasses for fattening lambs. Wis. Bull. 428 (1934) (Sta. Rpt.).

Beet molasses in sheep rations. Utah Bull. 276 (1936).

Cane molasses in lamb fattening. Nebr. Rpt. 1936, 1937.

Effect of molasses on digestibility of fats. Okla. Bien. Rept. 1937-8.

Rice byproducts and molasses for lambs. La. Bien. Rpt. 1937-8.

The effect of molasses on the digestibility of a lamb-fattening ration.

H. M. Briggs. Proc. 30th Ann. Meeting Am. Soc. Animal Prod. 1937, 145-9

C. A. 32, 5876 (1938).

- Digestibility of soybean straw and soybean straw-molasses mixtures (in feeding experiments) with sheep. K. Scharrer and H. Nebelsiek. Z. Tierernahr. Futtermittlek, 1, 72-81 (1938). C.A. 33, 10184 (1939).
- The effect of adding blackstrap molasses to a lamb-fattening ration. H. M. Briggs and V. G. Heller. J. Agr. Research 60, 65-72 (1940) C. A. 34, 4778 (1940)
- Molasses reduces digestibility of other components of rations. H. M. Briggs, V. G. Heller and Robert Wall. Okla. Agr. Expt. Sta., Bien. Rept. 1938-40, 62 (1940); cf. C. A. 34, 4778 C.A. 35, 29384 (1941).
- The effect of adding blackstrap molasses, K salts, sucrose and corn sirup to a lamb-fattening ration. H. M. Briggs and V. G. Heller. J. Agr. Research 67, 359-67 (1943); cf. C.A. 37, 915<sup>2</sup> C.A. 38, 1271<sup>4</sup>.

## Composition and Properties

- Cane syrup and molasses, their composition, production and consumption in the U.S. W.L. Owen. Planter and Sugar Mfgr. 74, 168, No. 9 (1925).
- Detn. of weight per gallon of blackstrap molasses. C. F. Snyder and L. D. Hammond, U. S. Dept. Com. Bur. Stand. Tech. Paper 345, p. 409 (1927).
- Keeping qualities of sugar came molasses. C. A. Browne. Proc. Int. Soc. Sugar Cane Tech. p. 216 (1936).
- Comparative analyses of molasses. A. T. Perkins and J. F. Merrill. Kans. Acad. Sci. Trans. 40, p. 131 (1937).
- Keeping quality of cane sugar molasses. H. C. P. Geerlings. Int. Soc. Sugar Cane Tech. Cong. Proc. 6, p. 980 (1938).

# Minerals .

- The relation of iron from various sources to nutritional anemia. H. S. Mitchell and L. Schmidt. J. Biol. Chem. 70, 471 (1926).
- The anti-anemic potency of cane and beet molasses. W. E. Krauss. Ohio Bimo. Bull. 147, p. 182 (1930) ESR 64, 163.
- Studies on nutritional anemia. D. Dickens Miss. Rpt. 1931. ESR 66,793. See also ESR 64,695.
- The nutritional availability of iron in molasses. Robt. S. Harris, L. Malcomb Mosher and John W. M. Bunker. Am. J. Digestive Diseases Nutrition 6, 459-62 (1939). C.A. 34, 10537 (1940).
- Nutritional availability of Fe in molasses. Robert S. Harris, L. Malcomb Mosher and John W. M. Bunker. Biol. Research Lab., Mass. Inst. Tech. Pub. 157; Intern. Sugar J. 45, 215-16 (1943). C.A. 38, 55369 (1944).

#### Vitamins

- Molasses as a source of vitamin B. V. E. Nelson et al. Ind. Eng. Chem. 17, 199 (1925) ESR 53,660.
- Molasses, sorghum and honey as sources of vitamin E. M. W. Taylor and V. E. Nelson. S. E. B. M. Proc. 26, p. 521 (1929) ESR 61,597.
- Cane molasses vs. beet molasses as source of B<sub>1</sub> and lactoflavin. S. E. B. M. Proc. 36, 167 (1937).
- Step in the concentration of vitamin B6 G. A. Emerson et al. J. Biol. Chem. 124, p. 377 (1938):
- Vitamin deficiencies in sugar-beet molasses. R. A. Rasmussen. Farm & Home Sci. (Utah Agr. Expt. Sta.) 3, 2, 4 (1942), C. A. 36, 35275 (1942).
- Antioxidant activity in sources of the B vitamins. Paul Gyorgy and Rudolph Tomarelli. J. Biol. Chem. 147, 515-24 (1943): C.A. 37, 63498 (1943).
- Effects of methods of preservation of roughage and of cane or wood molasses on vitamin excretion by cows. A. E. Teeri, D. Josselyn, N. F. Colovos, and H. A. Keener (New Hamp. Agr. Expt. Sta., Durham). J. Dairy Sci. 34, 299-302 (1951). C.A. 45, 7656d (1951).

### Miscellaneous

- Molasses feeds. Rothêa. Ann. Falsif. 15, No. 167-8 (1922) ESR 49,370.
- History and use of molasses. W. E. Fitch. Am. Food J. 19, No. 5 (1924).
- The use of molasses in the feeding of animals. W. E. Cross. (Transl.) Estac. Expt. Agr. Tucuman Circ. 13, p. 972 (1925).
- Use of molasses and sugar products for stock feeding. M. Bernard (transl.) J. Sta. Agron. Guadeloupe 5 (1925) See Planter and Sugar Mfgr. 76 (1925) No. 14.
- Molasses incorporated in grain mixtures. G. Bohstedt et al. A.S.A.P., p. 52 (1933).
- Molasses as a preserving agent in making soybean silage. E. C. Elting. J. Dairy Sci. 18, p. 440 (1935).
- Cane melasses as a livestock feed. Mo. Circ. 184 (1935).
- Cost of molasses for use in livestock rations. Wis. Bull. 430 (1935) (Ann. Rpt.).
- Molasses as a preserving agent in making soybean silage. E. C. Elting and J. P. La Master. Assoc. So. Agr. Work. Proc. 36, p. 11, 13 (1935).

- Molasses for preserving alfalfa silage. Wis. Bull. 435
- Molasses hay silage. C. B. Bender et al. J. Dairy Sci. 19, 137 (1936) ESR 75,684.
- Digestibility of molasses. Grass silage. Vt. Bull. 407 (1936) (Ann. Rpt).
- Molasses with drought fodders. Mo. Bull. 370 (1936) (Ann. Rpt.)
- Blackstrap molasses as a livestock feed. M. G. Snell et al. La. Circ. 19 (1937).
- Loss of nutrients in molasses silage. N. J. Rpt. 1936.
- Sweetening dry bluegrass. L. F. Graber. A.S.A.P. Proc., p. 201 (1936).
- Utilization of molasses. A. R. Lamb. Hawaii Planters Rec. 40, No. 2, p. 1121; (1936); 42, No. 71, p. 77 (1938) ESR 79,373.
- Soil and plant material analyses by rapid chemical methods. Francis E. Hance. Hawaiian Planters' Record 40, 189-299 (1936). C.A. 31, 1138<sup>2</sup> (1943).
- Blackstrap molasses as a livestock feed. M. G. Snell, Charles W. Upp and R. H. Lush. La. Agr. Expt. Sta. Circ. 19, 1-4 (1937). C.A. 31, 66997 (1937).
- Inspection of commercial feedstuffs. 'Philip H. Smith. Mass. Agr. Expt. Sta. Control Series Bull. 110, 64 pp. (1941). C. A. 36, 14002 (1942).
- Science Library BibliographySeries No. 555. Molasses for Growth of Yeast. London: Science Museum. 1941 2 leaves. C.A. 38, 56389 (1944).
- Stabilizing meat and fish meals. Sidney Musher (to Musher Foundation Inc.)
  U. S. Patent 2,282,786, May 12. C.A. 36 59148 (1942).
- Preserving various foods from oxidative deterioration. Sidney Musher (to Musher Foundation Inc.) U. S. Patent 2,282,784, May 12. C.A. 36, 5913 (1942).
- Molasses mixture for use in feeding livestock. Thomas E. Moutray (to The Universal Royalty and Development Co.). U. S. Fatent 2,307,062, Jan. 5. C.A. 37, 35267 (1943).
- University of Hawaii Agricultural Experiment Station. Bien. Rpt. 1944-1946.

  J. H. Beaumont and L. A. Henke (Honolulu, Hawaii). Hawaii Agr. Expt. Sta.

  Ann. Rpt. 1944-46, 5-156 (1947). C.A. 41, 7597d (1947).
- Use of molasses in grass silage preparation. Carl B. Bender. Tech. Rpt. Ser. No. 4, Sugar Research Foundation, Inc., New York, Apr. 1948.
- The nutritive value of wood molasses as compared with cane molasses. N. F. Colovos, H. A. Keener, J. R. Prescott, and A. E. Teeri (New Hamp. Agr. Expt. Sta., Durham). J. Dairy Sci. 32, 907-13 (1949): C.A. 44, 3589a (1950).
- Influence of adding AIV-acid, melasses, buttermilk, and whey powder in ensiling green crcps. Joel Axelsson and Sture Eriksson. Kgl. Lantbruks-Hogskol. Ann. 16, 515-30 (1949) C.A. 44,771i (1950).

#### Dried Molasses

- Desiccating Molasses and other liquids in vacuo. Albert C. Hougland. U. S. Patent 2,089,093, Aug. 3. C.A. 31, 69167 (1937).
- Evaporating molasses to produce a solid food material for stock. Albert C. Houghland. U. S. Patent 2,089,062, Aug. 3. C.A. 31, 69167 (1937).
- Drying molasses. Theodore Black and Jack Drew (to Molaska Co.) Can. Patent 369,598, Nov. 2, 1937. C.A. 32, 23823 (1938).
- Spray-drying apparatus suitable for fruit pulps, molasses, etc. Robert T. Northcutt and Andrew L. Johnston, Jr. (to Food Concentrates, Inc.) U. S. Patent 2,110,167, Mar. 8. C.A. 32, 32134 (1938).
- Utilization of cane molasses. III. Dry, solid product from cane molasses and its possible technical applications. T. R. Bhaskaran, S. C. Pillai and V. Subrahmanyan. J. Indian Inst. Sci. 22A, 139-48 (1939) cf. C.A. 33, 66375. C.A. 33, 79243 (1939).
- Apparatus for desiccating molasses, corn sugar, corn sirup, malt sugar, etc. David D. Peebles (to Golden State Co., Ltd.). U. S. Patent 2,240,854, May 6. C.L. 35, 5743<sup>2</sup> (1941).
- Dehydration of molasses at Central Horminguero, Julio C. Gonzalez Maiz. Mem. assoc. tec. azucareros Cuba 17, 50-9 (1943) C.A. 38, 5428 (1944).
- Dehydration of blackstrap molasses. Ralph D. Lamie, Marion Moore, Charles F. Bonilla and Edgar J. Gealy. Sugar 39, No. 8, 26-7 (1944). C.A. 38, 5101 (1944).
- Packing and storage of solidified molasses in a dry state. J. G. Shrikhande. Indian Sugar 8, 73 (1945). C.A. 39, 38748 (1945).
- Feeding experiments with dried molasses- beet pulp. Nils Olsson and Folke Jarl. Lantbrukshogskol. Husdjursforsoksanstalt., Medd. No. 18, 60 pp. (1945). C.A. 40, 1952 (1946).
- Apparatus for drying molasses. Robert T. Northcutt and Robert T. Northcutt, Jr. (to Food Concentrates, Inc.). U. S. Patent 2,391,033, Dec. 18, 1945. C.A. 40, 6860 (1946).
- The Marketing of Feed Molasses. L. John Kutish. U. S. Dept. of Agriculture, PMA, Sugar Branch, February 1950, p. 31.
- Marketing Industrial Molasses. B. K. Doyle. Lgriculture Information Bull. 82 (U.S.D.A.) December 1951, p. 54.

OUT S. DEPARTMENT OF AGRICULTURE

- 1